

## AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

### LISTING OF CLAIMS:

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1. – 7. (cancelled)

8. (new) A method for inspecting a plurality of electrical circuits formed on a non-silicon wafer substrate, said electrical circuits including at least two distinct electrical circuit configurations, the method comprising:

defining an image map for use in inspecting a plurality of electrical circuits formed on a non-silicon wafer substrate, including:

obtaining at least two different references, each of said at least two references corresponding to one of at least two distinct electrical circuit configurations to be inspected;

obtaining orientation information for said plurality of electrical circuits;  
and

utilizing said at least two different references together with said orientation information to define said image map;

acquiring an optical inspection output of said plurality of electrical circuits formed on said non-silicon wafer substrate; and

employing said image map and said inspection output in a computerized automated inspection system to automatically inspect said plurality of electrical circuits.

9. (new) The method claimed in claim 8, wherein said obtaining at least two different references comprises defining for each of said at least two different references at least one of: a shape of the reference, a size of the reference, and a composition of electrical circuit features to be inspected using the reference.

10. (new) The method claimed in claim 9, wherein said electrical circuit features include at least one of holes and pads on said plurality of electrical circuits.

11. (new) The method claimed in claim 8, wherein said defining an image map further comprises grouping a plurality of references into at least one cluster.

12. (new) The method claimed in claim 11, further comprising defining for each of said at least one cluster at least one of a quantity of references included within the cluster, a type of each reference within the cluster, a location of each reference within the cluster, and an orientation of each reference within the cluster.

13. (new) The method claimed in claim 11, wherein said grouping comprises employing pattern recognition to automatically group said references into said at least one cluster.

14. (new) The method claimed in claim 13, wherein said employing pattern recognition further comprises automatically determining an orientation of said references.

15. (new) The method claimed in claim 8, wherein said defining an image map further comprises learning attributes associated with each non-identical circuit configuration, said attributes to be utilized by said computerized automated inspection system to inspect said plurality of electrical circuits.

16. (new) The method claimed in claim 8, wherein said defining an image map comprises learning features associated with each distinct electrical circuit configuration, said features to be utilized by said computerized automated inspection system to inspect said plurality of electrical circuits.

17. (new) The method claimed in claim 8 wherein said plurality of electrical circuits formed on a non-silicon wafer substrate comprise printed circuit boards (PCBs).